4602 Plettner Lane, #3C
Evergreen, CO 80439
(303) 906-6823

May 24, 2018

Mr. Robert V. Smith, CHMM
Regional Industrial Hygienist
GSA-PBS Region 8
E-mail: robertv.smith@gsa.gov

RE: ***Indoor Airborne Dust Sampling***
EPA Building, 3rd Floor
Denver, CO

Introduction

On May 18th, 2018, Stiles Environmental & Industrial Hygiene, LLC conducted indoor air quality testing for airborne dust at the subject site. The building is the site of the federal Environmental Protection Agency regional office. Recent renovation activities prompted concerns of poor air quality related to lingering airborne dust. Air samples and direct readings for various sized dust particles were collected from selected areas throughout the 3rd floor where the renovations took place, as well as outdoor baseline locations. The testing was performed in an effort to demonstrate the post-construction indoor airborne dust concentrations were within acceptable levels and weren't significantly higher from one location to another or from the outdoor baseline levels.

Scope of Work

All air samples were collected by a board-certified industrial hygienist (CIH) by the American Board of Industrial Hygiene. Air sampling was performed using specialized and approved dust sampling cassettes, with the use of a low flow sampling pump to draw in air, and direct-reading air monitoring equipment with datalogging capabilities. The sampling was performed for the following conditions:

1) Total Particulates (Not Otherwise Regulated) – also known as nuisance dusts or particulates not otherwise classified, this is the total dust by weight in the air.
2) Respirable Particulates (Not Otherwise Regulated) – also known as the respirable fraction of nuisance dusts or particulates not otherwise classified, that can penetrate deep into the gas-exchange region of the lungs.
3) 6 Sizes of Airborne Particulates (0.3, 0.5, 1.0, 2.5, 5.0, 10.0 µm) – inhalable particulate matter found in the form of solid and liquid particles. Particulate matter from 0.3-10.0+ micrometers (µm) in diameter were sampled, with the smaller sized particulates being more respirable.

Methodology

Sampling was performed using the following methods and/or equipment:

1) Total Particulates – Sampled on 37-mm cassettes with pre-weighted, 5-µm PVC filters. Sampled and analyzed following the NIOSH 0500 Method. Results are reported in milligrams per cubic meter of air (mg/m^3).
2) Respirable Particulates – Sampled on 37-mm cassettes with pre-weighted, 5-µm PVC filters. An inline aluminum cyclone was used to sample the respirable fraction. Sampled and analyzed following the NIOSH 0600 Method. Results are reported in milligrams per cubic meter of air (mg/m^3).
3) Airborne Dust – Readings collected using a GrayWolf PC-3016A 6-Channel Particle Counter. Results are expressed in particles of each size (0.3, 0.5, 1.0, 2.5, 5.0, 10.0 µm) per cubic meter of air ($count/m^3$), as well as approximate mass concentration in micrograms per cubic meter of air ($\mu g/m^3$).

Results

Total & Respirable Dust – Cassette Samples

The results were compared to applicable OSHA permissible exposure limits (PELs) and ACGIH threshold limit values (TLVs). Please also refer to the attached laboratory reports.

Table 1: Total Airborne Dust Results – May 18, 2018

Location	Sample No.	Volume	Result (mg/m^3)	OSHA PEL (mg/m^3)	ACGIH TLV (mg/m^3)
3100s/3110s Cubicles	176778	943	**0.010**	15.0	10.0
3140s/3150s Cubicles	176779	957	**0.006**	15.0	10.0
Field Blank	176780	NA	**<0.001**	15.0	10.0

Table 2: Respirable Airborne Dust Results – May 18, 2018

Location	Sample No.	Volume	Result (mg/m^3)	OSHA PEL (mg/m^3)	ACGIH TLV (mg/m^3)
3100s/3110s Cubicles	176782	1195	**0.008**	5.0	3.0
3140s/3150s Cubicles	176783	1224	**0.004**	5.0	3.0
Field Blank	176784	NA	**<0.001**	5.0	3.0

PM2.5 & PM10 – Particle Counter

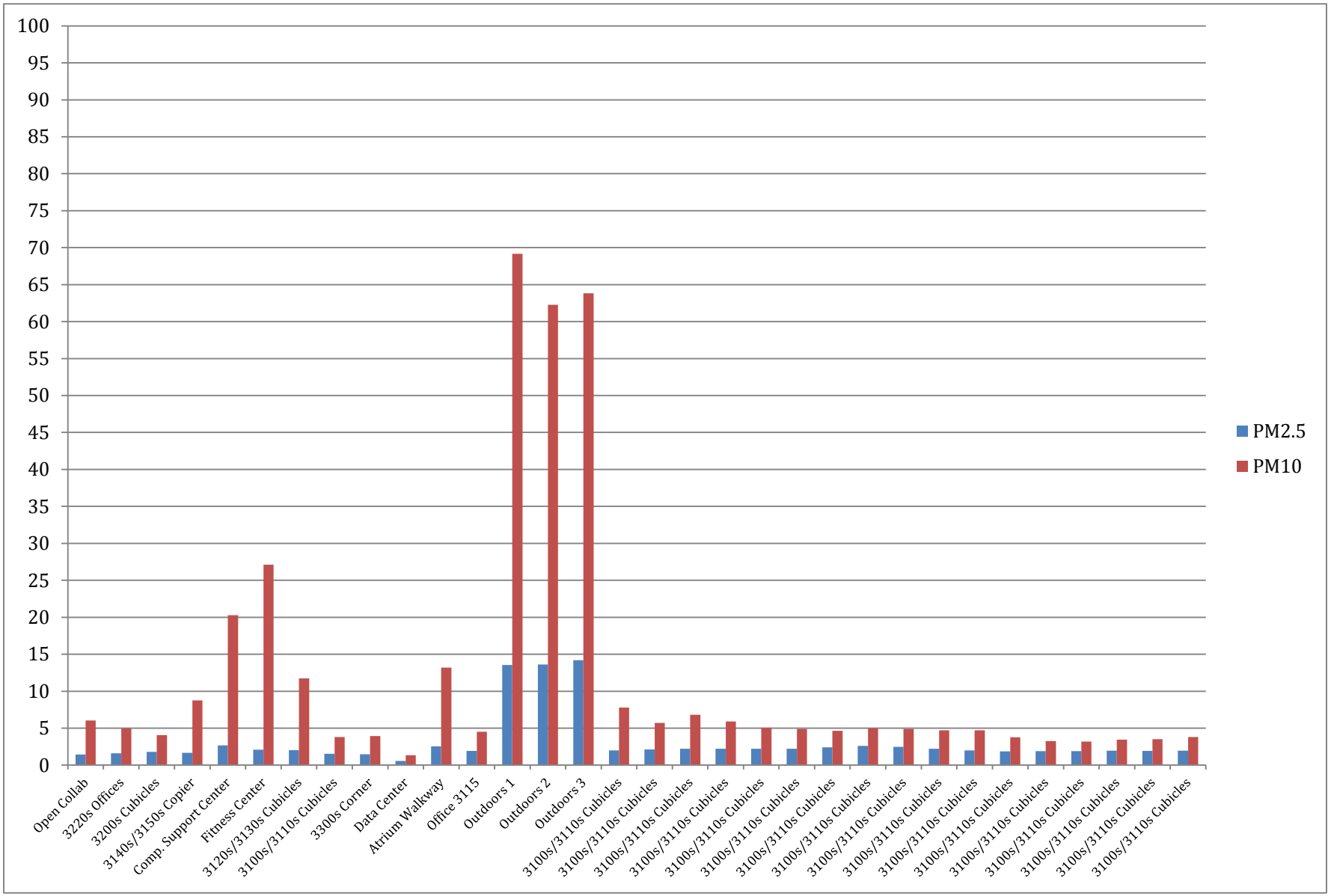
The particle count data gathered and summarized in the table below were compared to EPA's National Ambient Air Quality Standards (NAAQS) for particulate matter. The data reports approximate mass concentration per particle size, given in $\mu g/m^3$. The NAAQS standards are:

- PM2.5 annual exposure primary standard for sensitive populations - 12.0 $\mu g/m^3$
- PM2.5 annual secondary standard for general public - 15.0 $\mu g/m^3$
- PM2.5 24-hour exposure standard - 35 $\mu g/m^3$
- PM10 annual exposure standard – NA
- PM10 24-hour standard - 150 $\mu g/m^3$

Table 3: Particulate Matter Data (5/18/18) – 3rd Floor

Location	Date Time	Cumulative PM2.5 (µg/m^3)	Cumulative PM10 (µg/m^3)
Open Collab	18-May-18 08:37:01 AM	1.45	6.02
3220s Offices	18-May-18 08:46:38 AM	1.59	4.97
3200s Cubicles	18-May-18 08:51:53 AM	1.78	4.07
3140s/3150s Copier	18-May-18 09:05:26 AM	1.65	8.77
Comp. Support Center	18-May-18 09:19:02 AM	2.68	20.27
Fitness Center	18-May-18 09:26:09 AM	2.09	27.12
3120s/3130s Cubicles	18-May-18 09:35:07 AM	2.01	11.72
3100s/3110s Cubicles	18-May-18 09:41:04 AM	1.52	3.80
3300s Corner	18-May-18 09:51:31 AM	1.46	3.94
Data Center	18-May-18 09:59:37 AM	0.57	1.35
Atrium Walkway	18-May-18 10:04:20 AM	2.54	13.19
Office 3115	18-May-18 10:08:22 AM	1.94	4.50
Outdoors 1	18-May-18 10:18:03 AM	13.56	69.17
Outdoors 2	18-May-18 10:21:07 AM	13.60	62.27
Outdoors 3	18-May-18 10:23:39 AM	14.20	63.83
3100s/3110s Cubicles	18-May-18 10:56:05 AM	2.00	7.78
3100s/3110s Cubicles	18-May-18 11:15:33 AM	2.11	5.71
3100s/3110s Cubicles	18-May-18 11:30:43 AM	2.21	6.81
3100s/3110s Cubicles	18-May-18 11:45:53 AM	2.20	5.90
3100s/3110s Cubicles	18-May-18 12:01:03 PM	2.20	5.06
3100s/3110s Cubicles	18-May-18 12:16:13 PM	2.20	4.89
3100s/3110s Cubicles	18-May-18 12:31:23 PM	2.42	4.65
3100s/3110s Cubicles	18-May-18 12:46:33 PM	2.60	4.96
3100s/3110s Cubicles	18-May-18 01:01:43 PM	2.48	4.91
3100s/3110s Cubicles	18-May-18 01:16:53 PM	2.21	4.71
3100s/3110s Cubicles	18-May-18 01:32:03 PM	2.00	4.71
3100s/3110s Cubicles	18-May-18 01:47:13 PM	1.86	3.77
3100s/3110s Cubicles	18-May-18 02:02:23 PM	1.89	3.24
3100s/3110s Cubicles	18-May-18 02:17:33 PM	1.90	3.19
3100s/3110s Cubicles	18-May-18 02:32:43 PM	1.96	3.43
3100s/3110s Cubicles	18-May-18 02:47:53 PM	1.92	3.52
3100s/3110s Cubicles	18-May-18 03:03:03 PM	1.96	3.79

Graph 1: PM2.5 & PM10 Readings (µg/m^3)



Photographs

Total & Respirable Dust Sampling

PM2.5 & PM10 Sampling

Statement of Independence, Qualifications & Limitations

Stiles Environmental & Industrial Hygiene, LLC is a privately-held company and is not affiliated with any financial institution or other corporate entity. Stiles was retained as an independent consultant to provide objective, impartial, indoor air quality testing at the subject site. Indoor air quality inspections and associated sampling are performed by trained consultants, certified by the American Board of Industrial Hygiene as Certified Industrial Hygienists. Stiles cannot guarantee and does not warrant this limited testing has revealed all possible adverse environmental conditions affecting the site. Stiles assumes no liability greater than the sum of the invoice for its services.

Signatory

Prepared by:

Scott Stiles, CIH
Certification No. 9963
Consultant

Attachment: Laboratory Report

REVISED REPORT
5-22-18

12421 W. 49TH AVENUE, UNIT #6
WHEAT RIDGE, CO 80033 - (303) 463-8270

NUISANCE DUST - TOTAL/RESPIRABLE
NIOSH 0500/0600 METHOD(S) - PAGE 1 OF 1

CLIENT:
STILES ENVIRONMENTAL & INDUSTRIAL HYGIENE
4602 PLETTNER LANE #3C
EVERGREEN, CO 80439

ANALYSIS DATE: 5-21-18
REPORTING DATE: 5-21-18
RECEIPT DATE: 5-18-18
CLIENT JOB NO.: 18-091
PROJECT TITLE: NONE GIVEN
DCMSL PROJECT: SEIH173

DCM NO.	CLIENT NUMBER	VOLUME (L)	DUST (1) (mg)	NUISANCE DUST TOTAL/RESPIRABLE (1) (mg/m3)
-1R	176778	943	0.009	0.010
-2R	176779	957	0.006	0.006
-3R	176780	0	<0.001	-
-4R	176782	1195	0.009	0.008
-5R	176783	1224	0.005	0.004
-6R	176784	0	<0.001	-

(1) DUST IS CONSIDERED RESPIRABLE BASED ON SAMPLING METHOD. SAMPLES MUST BE COLLECTED USING A CYCLONE DEVICE.

THE SAMPLES WERE ANALYZED USING THE NIOSH 0500/0600 METHOD(S). PREWEIGHED FILTERS WERE POST WEIGHED TO DETERMINE TOTAL NUISANCE DUST COLLECTED ON THE FILTERS. THE COEFFICIENT OF VARIATION OF THIS METHOD AS STATED BY NIOSH 0500 IS 0.043 TO 0.145 FOR A RANGE OF 0.30mg TO 2.00mg PER SAMPLE. THE RANGE STUDIED IN THIS METHOD IS 0.5 TO 10mg/m3.

THE SAMPLES WERE WEIGHED WITH A METTLER XP56 ANALYTICAL MICROBALANCE WITH A REPORTING LIMIT OF ±0.006mg. THE BALANCE IS CERTIFIED TO BE WITHIN INSTRUMENT SPECIFICATIONS AND TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

THE RESULTS ARE BLANK CORRECTED.

Lab ID # 101526

JASON BARNES, ANALYST

DCM Science Laboratory, Inc.
12421 W. 49th Avenue, Unit #6
Wheat Ridge, CO 80033

(303) 463-8270/(800) 852-7340
(303) 463-8267 – fax

Date/Time Received _____ DCMSL Group No. 1946 DCMSL Log No. SGIN173

Field Data Sheet/Chain of Custody

Samples Submitted By:
Company: Stiles Environmental & Industrial Hygiene
Address: 4602 Plettner Lane #3C
Evergreen, CO 80439

Job/P.O. # 18-091

Project Title —

Contact: Scott Stiles
Phone: _____
Fax: _____
Cell/Pager: 303-906-6823

Archive: All samples are archived for 6 months unless other arrangements are made.

E-Mail reports@stileseih.com

Turnaround Time Requested:
[ ] Standard (3 to 5 Business Days)
[X] 24 Hour Rush
[ ] 2 Hour Rush (Asbestos Only)
[ ] Other _____

Procedure Requested:

ASBESTOS			XRD		OTHER	
Bulk	[ ]	Standard EPA	[ ]	Respirable Silica	[ ]	Optical Microscopy
	[ ]	Progressive	[ ]	Bulk Silica	[X]	Gravimetric
	[ ]	Point Count	[ ]	Scan & Search	[ ]	SEM
	[ ]	Other	[ ]	Other	[ ]	Other
Air	[ ]	NIOSH 7400				
	[ ]	OSHA ID-160				
	[ ]	Other				

ADDITIONAL INFORMATION Results EOD Mon. (5/21/18)

Client Sample No.:	Sample Date	Air Volume	Other Information
1 176778	5/18/18	943 L	Total • 3100s/3110s
2 176779		957 L	Total - 3140s/3150s
3 176780		—	Total - Blank
4 176782		1195 L	Respirable - 3100s/3110s
5 176783		1224 L	Respirable - 3140s/3150s
6 176784		—	Respirable - Blank
7			
8			
9			
10			

Relinquished By: Scott Stiles Date/Time 5/18/18 5:00

Received By: D Harvey Date/Time 5/18/18 4:49

Revised 3-1-06